REMARKS

Claims 1-8, 10-11 and 14 are pending in this application. Claims 4-8 and 11 are currently withdrawn. Applicants respectfully request reconsideration of the pending claims.

I. Interview

The courtesies extended to Applicants' representative by Examiner Listvoyb at the interview held August 13, 2009, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below, which constitute Applicants' record of the interview.

II. Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 1-3 and 10 under 35 U.S.C. §103(a) over JP 2003-073538 ("Mitsuru") in view of U.S. Patent Application Publication No. 2005/0001349 ("Yosimura") as evidenced by EP 0288041 ("EP 041"). Applicants respectfully traverse the rejection.

The Patent Office alleges that paragraph [0052] of Mitsuru describes a polylactic acid-lamellar clay mineral bonded body consisting of a lamellar clay mineral and one of said poly-L-lactic acid and said poly-D-lactic acid bonded to the lamellar clay mineral, wherein the other of said poly-L-lactic acid and said poly-D-lactic acid is not bonded to the lamellar clay material, as recited in claim 1.

However, Applicants respectfully submit that the Patent Office has mischaracterized the teachings of Mitsuru. To aid in a better understanding of Mitsuru, Applicants have prepared (and attach a copy of) an English-language translation of paragraph [0052] of Mitsuru.

Paragraph [0052] of Mitsuru describes:

> Next, in the step of polymerization, the lamellar clay mineral obtained in the step of organification and at least one polymerizable monomer selected from a group consisting of L-lactic acid, D-lactic acid, L-lactide and D-lactide are mixed to polymerize the polymerizable monomer by utilizing hydroxyl groups in said organic onium salt as reaction points.

In other words, paragraph [0052] of Mitsuru merely describes a polymerized structure consisting of (1) a lamellar clay mineral and (2) at least one polymerizable monomer selected from group consisting of L-lactic acid, D-lactic acid, L-lactide and D-lactide. As such, if one merely looked to the polymerizable monomers as being poly-lactic acids (which are recited in the present claims), the polymerized structure of Mitsuru can be represented by the following iterations: (1) a lamellar clay mineral bonded to L-lactic acid (where the polymerizable monomer was only L-lactic acid materials), (2) a lamellar clay mineral bonded to D-lactic acid (where the polymerizable monomer was only D-lactic acid materials) or (3) a lamellar clay mineral bonded to both L-lactic acid and D-lactic acid (where the polymerizable monomer includes both L-lactic acid materials and D-lactic acid materials).

Because claim 1 requires the presence of both poly-L-lactic acid and poly-D-lactic acid, the first two iterations in which only one type of lactic acid is present are inapplicable. Furthermore, although the third iteration includes both L-lactic acid and D-lactic acid, this iteration requires both the L-lactic acid and the D-lactic acid to be present during polymerization and, as such, both of these poly-lactic acids are necessarily bonded to the lamellar clay structure. As such, Mitsuru does not describe a polylactic acid-lamellar clay mineral bonded body consisting of a lamellar clay mineral and one of said poly-L-lactic acid and said poly-D-lactic acid bonded to the lamellar clay mineral, wherein the other of said poly-L-lactic acid and said poly-D-lactic acid is not bonded to the lamellar clay material, as recited in claim 1.

Furthermore, the Patent Office sets forth on page 2 of the Final Rejection several speculative positions, unsupported by Mitsuru, that the process of Mitsuru could result in the lamellar clay as claimed. Applicants submit that these speculative positions do not form a proper basis for rejection, and do not indicate the claimed polylactic acid resin composition is achieved.

Regarding these speculative positions, the Patent Office first mentions molecular weight of the polylactic acid as somehow indicating some end groups might remain unbound. There is no reasonable basis for any such conclusion based upon the molecular weight of the polylactic acid. Similarly, the Patent Office mentions an allegedly broad range for ratios of lactic acids to onium salts, but without more information this also fails to indicate anything regarding unbound groups. Furthermore, the Patent Office next mentions the size of the distance between the clay layers, and concludes some polylactic acid might not be able to penetrate or bind. Again, this is merely speculative, and provides no evidence of the presence, intended or otherwise, of any amount of unbonded polylactic acid. Finally, the Patent Office cites to different processes as allegedly having unbonded polylactic acid, but again speculates such a result without any reasonable basis of support.

Regardless, even if some unbonded amounts of polylactic acid are present in Mitsuru as alleged, such does not equal the claimed polylactic acid resin composition. The present claims require two different materials to be present ($\geq$ 85% optical purity poly-L-lactic acid and $\geq$ 85% optical purity poly-D-lactic acid), one of which is bonded to the lamellar clay and one of which is not bonded to the lamellar clay.

Even if Mitsuru has some of both poly-L-lactic acids and poly-D-lactic acids present, and some of both unbonded, such does <u>not</u> describe or suggest bonding of one type of optical purity polylactic acid to the clay and not bonding of the other. In other words, under the Patent Office's speculative positions, Mitsuru would at best have a mixture of bonded and

unbonded types of each polylactic acid. Mitsuru would not have one material (≥ 85% poly-L-lactic acid or ≥ 85% poly-D-lactic acid) bounded to lamellar clay, while the other of these materials is not. The mere presence of the unbonded forms of both polylactic acids alone does not equal the limitation required by claim 1.

Furthermore, Applicants submit that Mitsuru fails to describe a polylactic acid resin composition in which the stereocrystals ratio is greater than 70%, as required by claim 1.

However, in the Office Action, the Patent Office alleged that because Mitsuru's composition is allegedly equal to the composition of claim 1, Mitsuru's composition would inherently possess a stereoregular crystal (i.e., stereocrystal) ratio within the recited range (70% to 100%). See Final Rejection, pages 4 and 7. Applicants respectfully disagree for the reasons discussed below.

First, Applicants submit that Comparative Example 9 effectively rebuts the Patent Office's allegation of inherency. Inherency requires that a particular result must always be present.

The polylactic acid-clay composition described in Comparative Example 9 was obtained by ring-opening polymerization of both L-lactide and D-lactide in the presence of a lamellar clay mineral (i.e., 18(OH)2-Mont). See, page 22, lines 20-29 of the present specification. In other words, the polylactic acid-clay composition comprises a copolymer of poly-D-lactic acid and poly-L-lactic acid, wherein both the poly-D-lactic acid and the poly-L-lactic acid are bound to the lamellar clay mineral.

As shown in Table 1, the polylactic acid-clay composition described in Comparative Example 9 did not possess a stereocrystal ratio because the polylactic acid in this composition was amorphous (i.e., not crystalline), which means that the stereocrystal ratio (and melting temperature) cannot be measured. As such, Comparative Example 9 effectively rebuts the

Patent Office's allegation of inherency because the polylactic acid-clay composition described therein did not possess a stereocrystal ratio.

Furthermore, as discussed above, Mitsuru at best describes polymerizing both D-lactide and L-lactide to form their respective polylactic acid bound to a lamellar clay mineral. As such, Comparative Example 9 embodies the description in paragraph [0052] of Mitsuru and further demonstrates that the polylactic acid-clay composition described in paragraph [0052] of Mitsuru does not inherently possess a stereocrystal ratio.

Additionally, Applicants respectfully disagree with the Patent Office's statement that the polylactic acid-clay composition examples recited in the specification (except Comparative Examples 7-8) each have a stereocrystal ratio that is "higher than 70% or 100%." See Final Rejection, page 7. Applicants point out that Comparative Examples 1-5 each demonstrate a stereocrystal ratio of 70.0%, 61.8%, 57.5%, 57.1% and 63.9, respectively, all of which are below the claimed range of "greater than 70.0%" recited in claim 1.

Yosimura, as evidenced by EP 041, does not remedy the deficiencies of Mitsuru. Specifically, Yosimura or EP 041 do not describe a polylactic acid-lamellar clay mineral bonded body (1) consisting of a lamellar clay mineral and one of said poly-L-lactic acid and said poly-D-lactic acid bonded to the lamellar clay mineral, wherein the other of said poly-L-lactic acid and said poly-D-lactic acid is not bonded to the lamellar clay material and (2) having a stereocrystals ratio greater than 70%, as recited in claim 1.

Yosimura was merely introduced as allegedly describing a lactic acid polymer composition, which comprises L-lactic acid having an optical purity of 95% or more. See page 5 of the Final Rejection (citing Yosimura, paragraph [0085]). Furthermore, EP 041 was merely introduced as allegedly describing the melting point of a blend composition that includes poly-L-lactic acid and poly-D-lactic acid. See Final Rejection, page 6. Neither of these references remedy the deficiencies described above with respect to Mitsuru.

As such, one having ordinary skill in the art would not have been provided with any reason or rationale to have derived the polylactic acid resin composition recited in claim 1 with any reasonable expectation of success.

Withdrawal of the rejection is requested.

IV. Rejoinder

Applicants also respectfully request rejoinder of non-elected method claims 4 and 5, and product claims 6-8 and 11. Where product and process claims are presented in the same application, Applicants may be called upon under 35 U.S.C. §121 to elect claims to either the product or process. MPEP §821.04. However, in the case of an elected product claim, rejoinder will be permitted when a product claim is found allowable and the withdrawn process claim depends from or otherwise includes all the limitations of an allowed product claim. *Id.* Because process claims 4 and 5 include all the limitations of product claim 1, the process claims 4 and 5 must be rejoined with the product claims when the product claims are found allowable.

Furthermore, where restriction was required between independent or distinct products, and all claims directed to an elected invention are allowable, any restriction requirement between the elected invention and any non-elected invention that depends from or otherwise requires all the limitations of an allowable claim should be withdrawn. Claims that require all the limitations of an allowable claim should be rejoined and fully examined for patentability in accordance with 37 C.F.R. 1.104. *See* MPEP §821.04(a). Because claims 6-8 and 11 variously depend from elected product claim 1, claims 6-8 and 11 must be rejoined with the product claims when the product claims are found allowable.

Because the elected product claims are believed to be allowable for at least the reasons presented below, Applicants respectfully request withdrawal of the Restriction Requirement and rejoinder of claims 4-8 and 11.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-8, 10-11 and 14 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Jeremy D. Tillman
Registration No. 62,639

JAO:JDT/hs

Attachment:
English Translation of Paragraph [0052] Of Mitsuru

Date: September 16, 2009

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

[0052]

Next, in the step of polymerization, the lamellar clay mineral obtained in the step of organification and at least one polymerizable monomer selected from a group consisting of L-lactic acid, D-lactic acid, L-lactide, and D-lactide are mixed to polymerize the polymerizable monomer by utilizing hydroxyl groups in said organic onium salt as reaction points. Then, polylactic acid can be produced. In case that L-lactic acid and/or D-lactic acid are used, polylactic acid can be produced by direct polymerization of these compounds. In case that L-lactide and/or D-lactide are used, polylactic acid can be produced by ring-opening polymerization of these compounds. Such polymerization can be performed in the presence of a certain catalyst, or in the absence of catalyst. Examples of the catalyst include tin octylate, tin chloride, zinc chloride, lead oxide, lead carbonate, titanium chloride, alkoxy titanium, germanium oxide and zirconium oxide. The use quantity is preferably 0.001 to 1 parts by weight based on 100 parts by weight of the polymerizable monomer. The reaction temperature in the polymerization step is preferably about 100 to 200°C.